



EARTHQUAKE ENGINEERING RESEARCH INSTITUTE NEWSLETTER

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News of the Institute

Last Call for 60th Annual Meeting

EERI's 60th Annual Meeting kicks off Wednesday, February 6, 2008, at the Astor Crowne Plaza Hotel in New Orleans' historic French Quarter — a 78-square block area that is home to over 200 restaurants and scores of live music clubs featuring blues, pop, rock, zydeco, folk, and funk. The Aquarium of the Americas, Jackson Square, the Riverwalk Shopping Center, and riverboat rides are all within walking distance of the hotel. The St. Charles Streetcar is an easily accessible, inexpensive way to get out to the attractions elsewhere in the city. The weather is mild in New Orleans in the winter months, averaging highs in the 60s.

The Annual Meeting program will survey the lessons that Hurricane Katrina offers for earthquake risk reduction. More than 25 speakers will cover such topics as the response to and recovery from the 2005 urban catastrophe and how it impacted critical infrastructure and the energy sector.



Steamboat Natchez at Toulouse Street and the River in the French Quarter (photo: Richard Nowitz/ New Orleans Convention and Visitors Bureau).

Program brochures were mailed to EERI members. Information is also available at www.eeri.org, along with online registration and a link to hotel reservations. The early registration deadline is January 16, which will save you \$50. Make your hotel reservations by January 8 to help EERI fill its room block! Take action now — you won't want to miss this important meeting or the unique experience of New Orleans!

Subscribing Member Sponsorships

EERI thanks the following Subscribing Members who are sponsoring Annual Meeting events: Computers and Structures, Kinematics, Degenkolb Engineers, Geomatrix Consultants, the Pacific Earthquake Engineering Research Center, the Mid-America Earthquake Center, MTS Systems, and Refraction Technology (REFTEK). Other Subscribing Members who are interested in sponsorships should contact Sonya Hollenbeck (sonya@eeri.org).

Honors for New Orleans Levee Modeling

The NEES@Rensselaer team was recently honored by the U.S. Army Corps of Engineers for independent centrifuge modeling experiments that contributed to repairs and improvements of the New Orleans hurricane protection system made by the Corps following Hurricane Katrina. The team members, led by professors Tarek Abdoun, Ricardo Dobry (both EERI members), and Thomas Zimmie, received several awards from the Corps and its Hurricane Katrina Interagency Performance Evaluation Task Force (IPET).

"The Rensselaer centrifuge experiments, coupled with those conducted by the U.S. Army Corps of Engineers, discovered and validated floodwall failure

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Obituaries

Eric Elsesser (1934-2007)

Eric Elsesser, structural engineer and founding partner of Forell/Elsesser Engineers, Inc., died peacefully at home in Sausalito on December 6, 2007, after a seven-month battle with a brain tumor. He was 73 years old.

Eric's structural engineering career reflected his passion for innovation and creativity in integrating the disciplines of structural engineering and architecture through building configuration and the collaborative design process. He was skilled at imparting engineering knowledge to architecture students at UC Berkeley and to others at professional forums. Eric was a cutting-edge leader in the advancement of seismic isolation and energy dissipating seismic systems. Active professionally until his final illness, he was at the forefront of implementing new approaches to seismic design with his partners and with the entire structural community.

A native San Franciscan, Eric graduated from Stanford University in 1956 and began his engineering career with John Blume in San Francisco. In 1960 he opened his own practice, and in 1969, he and Nicholas Forell opened Forell/Elsesser

Engineers, Inc. Eric was a skilled mentor at his firm and also influenced the professional community. He served on the Seismology Committee of the Structural Engineers Association of Northern California (SEAONC) during the formative years of seismic code development. He was president of SEAONC in 1979, became a SEAONC Fellow in 1996, was made an honorary member of SEAONC in 2001, and received the SEAONC 2002 H. J. Brunner Lifetime Achievement Award. In 2001, he was named a Fellow of the Structural Engineers Association of California (SEAOC).

His contributions to the built environment consist of numerous complex new building projects and a large number of important historic building renovations and seismic retrofits. Among the new buildings are the San Francisco State University Student Union Building, the USGS Federal Building in Menlo Park, the San Jose Courthouse and Federal Building, the San Francisco Museum of Modern Art, and the San Francisco State Office Building at the Civic Center complex. The seismic retrofits include historic landmarks such as the Salt Lake City and County Building, the Oakland City Hall, the Pacific Gas and Electric Company headquarters building, the Pasadena City Hall, the San Francisco



Eric Elsesser

Asian Art Museum, and the San Francisco City Hall.

Eric was EERI's Distinguished Lecturer for 2007. He entitled his lecture "What's Around the Corner in Seismic Design?" and gave it at the Annual Meeting in February in Los Angeles. Soon afterwards, Grace Kang of his office and Chris Arnold held a series of conversations with him, which will be incorporated into the EERI "Connections" Oral History Series.

Eric will be greatly missed and long remembered by his partners, colleagues, clients, and friends. Contributions to The Sylvia and Eric Elsesser Fellowship can be sent to Stanford University, Structural Engineering Program, c/o Kim Vonner, CEE Department 4020, Stanford, CA 94305.

Le Val Lund (1923- 2007)



An unstinting contributor to the field of lifeline earthquake engineering, EERI member Le Val Lund died at his home on November 30 due to complications of lymphoma. After serving in the Navy and receiving his B.S. in civil engineering from Caltech, he began 42 years of service at the Los Angeles Department

of Water and Power (LADWP), to which he remained adamantly loyal. He also earned an M.S. degree in civil engineering from the University of Southern California. As an LADWP leader and manager, he was a primary force in the post-1971 seismic rehabilitation program that analyzed, modified, or replaced earth-fill dams, reducing LADWP water system losses significantly during the 1994 Northridge earthquake. His concerns ranged from source to service connection and included multihazard aspects and consideration of water system interactions with other lifeline systems. During the drought of

1977, Lund was the co-leader of a task force charged with the development of a water conservation plan that is still in effect today. Lund was the repository of much of LADWP's history, and was a source for people inside and outside the department who needed to know why the system was built the way it was, and what had come before. Throughout his life, he worked tirelessly for organizations such as EERI, ASCE, and AWWA, with an emphasis on safety and performance of infrastructure systems. He participated

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C. Allin Cornell (1938-2007)

EERI member C. Allin Cornell lost his two-year battle with cancer December 14, 2007, at the age of 69. Allin had an enormous influence on the fields of structural engineering, seismology, and geophysics, beginning with his landmark 1968 paper, entitled "Engineering Seismic Risk Analysis," in which he invented the field of probabilistic seismic hazard analysis (PSHA) by quantifying seismic hazard and risk.

His book, *Probability, Statistics, and Decision for Civil Engineers*, written with Jack Benjamin and published in 1970, opened up new ways of thinking for an entire generation of civil and structural engineering students. Allin maintained his technical and scientific leadership for nearly four decades. His publications on probabilistic modeling of earthquake processes form the basis for earthquake forecasting that have been widely applied in California and around the world, and are now incorporated in modern building codes. Allin made fundamental contributions to structural engineering by integrating seismic hazard analysis, building vulnerability, and failure

probability into the design process. These numerous contributions have greatly increased public safety.

Allin received his B.A. in architecture and his M.S. and Ph.D. in civil engineering, all from Stanford University. After serving on the civil engineering faculty of the Massachusetts Institute of Technology from 1964 to 1983, he returned to Stanford, where he began an unusual arrangement as a half-time research professor and a half-time independent engineering consultant. His goals were both to apply advanced probabilistic methods and to conduct research stimulated by needs identified through his practice. Both research and practice centered on characterization of structural loads and analysis of safety of structures, including their near-failure behavior.

In the 1990s, the U.S. Geological Survey (USGS) upgraded its PSHA efforts, under the direction of EERI member Art Frankel, to produce National Seismic Hazard Maps, first published in 1996. Allin served in important advisory and review roles for these efforts as well as for the Southern California Earthquake Center's development of its "Master Model," founded on the precepts of PSHA. The probabilistic framework for synthesizing and quantifying



C. Allin Cornell

earth science data, models, and uncertainties has become useful in decision making at many different levels, ranging from ordinary building code design and construction to risk evaluation of Yucca Mountain as a radioactive waste repository.

Allin was EERI's Distinguished Lecturer in 1999 and was awarded the Institute's highest honor in 2003, the George W. Housner Medal. In addition to many other honors, he was elected to the National Academy of Engineering; he was a fellow of the American Geophysical Union and a recipient of the Medal of the Seismological Society of America.

Allin's insights, wisdom, and wit will be greatly missed.

Le Val Lund

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in post-disaster earthquake investigations in Japan (Kobe), Turkey, El Salvador, and many U.S. locations. He served as chair of the Technical Council on Lifeline Earthquake Engineering, and his many honors included the C. Martin Duke Award. His significant professional contributions are recognized in many countries. He spent countless hours in pro bono work after retirement to help the engineering profession and local citizen communities. He will be remembered as a most "civil" civil engineer, as many knew him for his geniality most of all.



Le Val (bottom row, center) with a group (including many EERI members) that hiked up Mt. Fuji in Japan after the 9th World Conference on Earthquake Engineering in 1988. Also in the bottom row are EERI President Thalia Anagnos (left of Le Val) and Executive Director Susan Tubbesing (farthest left).

Levee Modeling

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mechanisms. These 'lessons learned' were factored into the system improvements to provide much better protection for the citizens of New Orleans," said Mike Sharp, co-leader of the IPET Geotechnical Structure Performance Analysis Team, who presented the awards at a November 28 ceremony in Rensselaer's Jonsson Engineering Center.

Abdoun, Zimmie, Dobry and their team tested small-scale models of sections of the flood-protection system using Rensselaer's 150 g-ton centrifuge, subjecting the models to flood loads that replicated conditions during Hurricane Katrina. Preliminary findings show that in the 17th Street model, the weak clay directly underneath the peat layer sheared first, causing the whole levee to slide. Abdoun presented the findings to peer review groups from the Am-

erican Society of Civil Engineers and the National Academy of Engineering. In testimony before the U.S. Senate Committee on Environment and Public Works, Zimmie said, "The emphasis over the past two years has been New Orleans, but there are thousands of miles of levees throughout the United States that can benefit from our research."

For more information, visit [http://news.rpi.edu/update.do?artcenterkey=2364&setappvar=page\(1\)](http://news.rpi.edu/update.do?artcenterkey=2364&setappvar=page(1)).

New Madrid Earthquake Scenario

The New Madrid Chapter of EERI has begun development of a New Madrid earthquake scenario, scheduled for completion in February 2012. This date is the bicentennial of the great New Madrid series of earthquakes that occurred in 1811 and 1812. This scenario will follow EERI's *Guidelines for Developing an Earthquake Scenario* published in 2006. The Central U. S. Earthquake Consortium (CUSEC), the Memphis office of the U.S. Geological Survey, and other professional organizations will work with the chapter in the scenario development.

The chapter has chosen a steering committee, which has developed the following goals for the scenario:

- to provide comprehensive estimates of physical damage and social and economic impacts of New Madrid seismic zone earthquakes;
- to plan and facilitate workshops or conferences with appropriate public agencies, private enterprises, and professional organizations to develop requested work-group products;
- to educate and inform the population within CUSEC's region;
- to gain acceptance of all-hazard mitigation within the CUSEC region;

- to improve governmental awareness concerning societal impacts, so that appropriate, cost-effective legislation and preparedness activities may be initiated;
- to provide appropriate decision-making tools to professional sectors (including design, response and recovery, business, and government) and to communities within the region.

Greg Hemen has accepted the role of project manager. If you wish to participate in the development of the New Madrid earthquake scenario, contact Hemen at greg_hemen@urscorp.com.

Endowment Fund Donors

EERI would like to thank the donors to the Endowment Fund shown below and acknowledge their recent contributions. EERI's Endowment supports those innovative projects that ensure the Institute's continuing leadership in the earthquake engineering professions.

\$10,000

Blume Foundation

Carl H. Josephson

James F. Davis

\$5,000

David A. Friedman & Paulette J. Meyer

\$500

James E. Russell
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News of the Membership

George Lee Receives Presidential Award

In November, EERI member George C. Lee, professor in the University at Buffalo (UB) Department of Civil, Structural and Environmental Engineering, received a 2006 Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring. The annual award, administered by the National Science Foundation, honors those who have demonstrated a commitment to mentoring students and boosting the participation of minorities, women, and disabled students in science, mathematics and engineering. It includes a \$10,000 grant for continued mentoring work and a Presidential certificate.

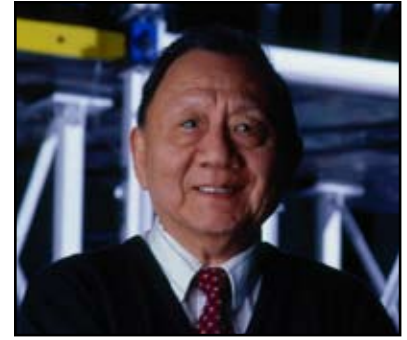
UB President John B. Simpson said, "MCEER wouldn't be headquartered at UB if it were not for the initiatives of George Lee." A UB professor of civil engineering since the department's earliest days in 1961, Lee is the founding and former director of MCEER. He served as dean of the School of Engineering and Applied Sciences from 1977-95, as chair of the Department of Civil, Structural and Environmental Engineering, and as associate director of the Calspan-UB Research Center.

For Lee, pioneering research and mentoring have always gone hand-in-hand. A prolific researcher, Lee has co-authored four books and published 250 papers on structural engineering and mechanics, steel structures, and earthquake engineering. His research has covered a

wide spectrum of basic and applied fields, ranging from earthquake engineering to modeling of the mechanics behavior of biological systems.

Lee has long maintained a belief that the success of the discipline depends on a comprehensive effort to promote engineering starting at the earliest levels, up through graduate school. His efforts have exposed literally thousands of high school students from under-represented groups in the Buffalo area to new opportunities through targeted science and engineering programs. In 1981, Lee started a modest summer program for 20 students from under-represented groups, serving as an instructor himself and working to enlist the help of other UB engineering faculty. The result was BEAM, Buffalo-area Engineering Awareness for Minorities, one of the region's earliest programs dedicated to stimulating interest in engineering among middle school and high school students.

Lee worked with, and fostered at UB, organizations focused on under-represented groups, including the National Society of Black Engineers, the Society of Women Engineers, and the Society of Hispanic Professional Engineers. The synergy among these programs has strengthened minority recruitment of students and faculty at UB. Lee's vision for BEAM and related programs has focused on making them sustain-



George C. Lee

able in the long term through the development of partnerships with both educational and industrial organizations.

In 1994, he was named director of the UB Greater Regional Industrial Technology Program, or UB GRIT, a project designed to help area businesses develop new products in cooperation with regional research universities. In 1994, he founded the Engineering Career Institute (ECI), a summer program designed to supplement the technical education that UB engineering students receive, while providing local companies with skilled interns.

Lee has been a proponent of international education, helping to negotiate UB's first exchange agreements in Beijing in 1980 and supporting more than 30 visiting international scholars. His accomplishments have earned him numerous awards.

A native of China, Lee received a bachelor's degree from National Taiwan University and holds master's and doctoral degrees in civil engineering from Lehigh University.

Ashtiany to Head IASPEI Commission

EERI member Mohsen Ghafory-Ashtiany, professor at the Institute of Earthquake Engineering and Seismology in Tehran, Iran, was recently elected chair of the Commission on Earthquake Hazard, Risk and Strong Ground Motion of the International

Association of Seismology and Physics of the Earth's Interior (IASPEI) for the period 2007-2010.

Under the umbrella of the IASPEI assemblies, the commission organizes discussion on topics such as the quantification of strong ground motion and earthquake hazard, the integration of multidisciplinary infor-

mation in the assessment of earthquake hazard and risk, the effects of earthquakes on megacities, communication between developed and developing regions, and the interaction between seismologists and the public. The commission provides a stage for the initiation of international and interdisciplinary cooperation.

News of the Institute

Summary of the Minutes of the Board of Directors Meeting of September 11, 2007

President Thalia Anagnos called the meeting to order at 8:35 a.m. Also present were Directors Jon Bray, Craig Comartin, Rich Eisner, S.K. Ghosh, Polat Gulkan, Laurie Johnson, Andrew Whittaker, Executive Director Susan Tubbesing, and Special Projects Manager Marjorie Greene. Secretary/Treasurer Lew was not able to attend.

Director Bray requested that EERI staff send materials to Board members at least a week before board meetings and that materials be sent electronically, so Board members can access them if they are traveling. This procedure will be put in place for the next Board meeting.

The Board approved two new student chapters at the Universities of Delaware and Colorado.

In referring to the publications report, Tubbesing pointed out that EERI has begun to explore new publication sales opportunities and has established a relationship with Amazon.com. The EERI website now gets approximately 10,000 hits each month. The number of Young Professional and E-student Members is growing. Ghosh suggested a competition among student chapters for the most student member alumni who become EERI Young Professional members. Lew has agreed to chair a new Membership Committee that will also include Comartin and Ghosh as well as younger members Pedro Silva at George Washington University and Farzin Zareian at the University of California Irvine. The committee will function by e-mail and phone to identify strategies to attract new and keep existing members. Bray suggested that the indus-

try representative associated with each student chapter visit and give a talk each year to promote the field and EERI.

President's Report: Shah Innovation Prize: Anagnos summarized a number of recommendations to strengthen the Shah Family Innovation Prize discussed the previous evening with Hareh and Joan Shah. The Prize Selection Committee will decide on modifications and bring proposed changes to the Board at the December meeting.

Strategic Plan: Anagnos reviewed the Strategic Plan, focusing on the two or three major items related to each goal that will drive EERI's activities during the next two years.

- **Goal #1: *Enhance and expand educational materials and technical programs:*** Anagnos stated that EERI is making good progress on this item. An Ad Hoc Publications Committee is meeting October 23 to develop a strategic plan for EERI's publications.
- **Goal #2. *Outreach and Advocacy.*** This goal includes the need for a strategy to better define EERI's role in a multihazard context. Johnson suggested that EERI form a multihazard study committee. Comartin noted that it should advise the Board on a strategic position with respect to multihazard and environmental issues and that this be announced at the annual business meeting during the Annual Meeting.
- **Goal # 4: *Fund-raising.*** Anagnos stated that the fund-raising goal is not well-developed. Considerable discussion followed: Tubbesing will provide the Board with budget projections that would enable EERI to function at full capacity, including a robust Learning from Earthquakes (LFE) program, increased staff support for the World Housing Encyclopedia (WHE), and increased scenario development. The Development Commit-

tee should be given a challenge to develop a strategy to fully fund these and other desired programs.

Secretary/Treasurer's Report: In Lew's absence, the Revenue and Expense Report was presented by Tubbesing. EERI is in good financial shape for the rest of this year but there are many unknowns about 2008. Tubbesing reported that Lew feels strongly that EERI not raise dues this year. EERI needs to establish an understanding among the members as to the possible serious financial situation facing EERI, and build a constituency to support EERI in the future. The Board is also looking to the new Ad Hoc Publications Committee for guidance in determining what EERI's core publications are and how they should be provided to the membership.

The Board voted unanimously to keep dues the same for the coming year. The *Spectra* subscription rate will also remain the same.

***Spectra* Editorial Assistant:** Tubbesing reported that Nikki Zielinski, the *Spectra* editorial assistant, has started a graduate program at the University of Oregon and is now handling the production work for *Earthquake Spectra* electronically from Eugene, Oregon. Polat Gulkan, the incoming *Spectra* Editor, indicated that this shouldn't present any delays or problems since review and production procedures are now fully web based, and his communications are all handled by e-mail.

Future Annual Meeting locations: According to the traditional rotation, the 2009 Annual Meeting should be held in Northern California; however, an enthusiastic group of EERI members has volunteered to organize the next Annual Meeting in Salt Lake City, Utah. A motion to hold the 2009 Annual Meeting in Salt Lake City passed unanimously. All agreed that in the 2010 Annual Meeting will return to Northern California.

2ICUDR funding: EERI has received a travel grant from the National Science Foundation (NSF) to send fifteen people to Taiwan to take part in the 2nd International Conference on Urban Disaster Reduction. The Taiwan government is funding an additional 10 people from the United States, so there will be approximately 25 U.S. participants. EERI has donated considerable staff time to help develop this conference.

2008 Annual Meeting: Laurie Johnson reported on her committee's progress. Although the program focuses on Hurricane Katrina, every session has lessons for earthquake engineering and earthquake loss reduction. Johnson expects the technical program to attract EERI members as well as many others. Hollenbeck was directed to make sure that members can reserve rooms at the hotel prior to the beginning of the Annual Meeting so they can attend Mardi Gras and so that afterwards they can participate in the field trip. This meeting will include a unique community forum on Thursday evening, February 7, that is being organized in conjunction with the Center for Hazards Assessment Response and Technology (CHART) at the University of New Orleans. All agreed that the Annual Meeting promises many exciting new activities and topics.

Joint EERI/CAEE National Conference: The next national conference will be organized as a joint national conference with Canada's CAEE in 2010 in Toronto. A joint executive committee will oversee conference planning, with membership from both organizations. Andre Filiatrault was nominated to be the U.S. conference co-chair. An MOU has been drafted and will be sent to CAEE for review.

COSMOS/EERI Medal Proposal: The Consortium of Organizations for Strong Motion Observation Systems (COSMOS) is proposing a new joint award with EERI in memory of

Bruce Bolt. The Board approved the award in concept, and asked Tubbesing to communicate their suggestions to the Honors committee to finalize the award.

Special Projects and Initiatives Funding Recommendations: The SPI Committee recommended two projects to be funded with remaining SPI funds for 2007. After considerable discussion, the Board approved a project to test a straw bale house (or components) on the shake table at the University of Nevada-Reno, as a shared-use project with NEES. The Board directed that the second project be revised, to broaden its scope, and brought back to the Board. Comartin will communicate this to the author.

WHE Business Plan: Comartin is currently developing a business plan to raise funds to support the WHE. It will be reviewed by the WHE Editorial Board and once final Comartin would like to give it to the Development Committee to get their help in raising the necessary funds. Comartin will bring the business plan to the Board at the December meeting.

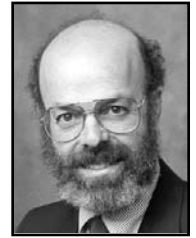
Concrete Coalition: On November 1, a small workshop will be held in Los Angeles with approximately 20 people who have been involved in evaluation and retrofit of concrete buildings. Comartin has developed a questionnaire for similarly experienced engineers to complete so EERI can begin to build a case history database. The workshop will provide an opportunity for input on the questionnaire design and for more general plans for the coalition.

Oral History Plans: The Board approved funds to enable Reitherman to travel to the Midwest to interview professors William Hall at the University of Illinois and Mete Sozen at Purdue to capture their perspectives on their contributions to earthquake engineering.

The meeting adjourned at 5:43 p.m.

Eisner Receives WSSPC Award

EERI Board Member Richard K. Eisner is the recipient of the 2007 Lifetime Achievement Award in Earthquake Risk Reduction from the Western



Richard K. Eisner

States Seismic Policy Council. Presented at the WSSPC annual conference in October, the award recognizes individuals who have demonstrated throughout their careers an extraordinary commitment, level of service, and contribution to the application of earthquake risk reduction to public policy.

Until his recent retirement, Rich was the regional administrator and manager of the California Integrated Seismic Network and California Earthquake and Tsunami Programs in the California Governor's Office of Emergency Services. As an architect, urban planner, and urban designer, Rich focused his 30-year career on issues of seismic design and hazard reduction. While serving as program manager on a National Science Foundation-funded project, he developed model hazard reduction and preparedness techniques based on Japanese practice. As director of the Bay Area Regional Earthquake Preparedness Project, he implemented these models and integrated knowledge from the earth and social sciences into mitigation and preparedness programs. A recognized expert in preparedness and emergency management, he participated in response and recovery operations following the Loma Prieta and Northridge earthquakes. Rich is currently serving on the National Earthquake Hazards Reduction Program Advisory Committee. In 2007 he joined the Fritz Institute as a consultant on the Bay Area Disaster Preparedness Initiative. For more information, visit www.wsspc.org/.

Subscribing Member News

CSI Donates Software to CGHED

EERI Subscribing Member Computers and Structures, Inc., has donated its structural analysis program SAP2000 to the Center for Global Health and Economic Development (CGHED) Access Project at Columbia University, which will use the software to design health care facilities in Mayange, Rwanda. Through the Access Project, CGHED mobilizes global health programs that enable low-resource countries to develop quality health systems for the poor, promote sustainable economic development, and achieve the United Nations' Millennium Development Goals. Access Project staff members facilitate communication between local, district, and central health care facilities and improve health facilities infrastructure. For more information, visit www.theaccessproject.com.

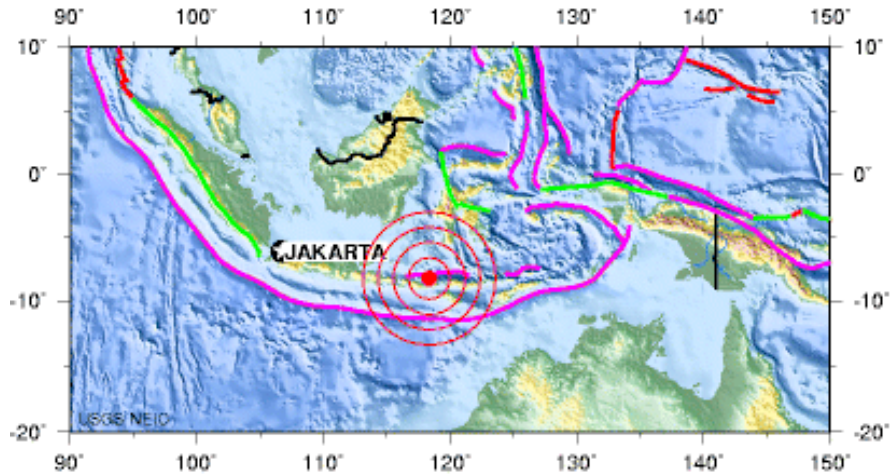
Kinematics' New Product

EERI Subscribing Member Kinematics, Inc., has introduced the Rock family of products — the fifth generation of Kinematics digital, multi-channel, low-power and high-dynamic range data acquisition systems. The Rock family is designed to meet the needs of various environmental monitoring data acquisition operational models and missions while offering exceptional data fidelity and signal purity at low-power consumption. The Granite 24-bit multi-channel recorder is the first product of the new Rock family, offering enhanced ease of use and functionality. The Granite is designed to withstand a 1-m drop and a 1-m-depth temporary water immersion without failure. It will meet a significant variety of user requirements. For more information, visit <http://www.kinematics.com>.

Learning from Earthquakes

Sumbawa, Indonesia, Earthquake of November 25, 2007

A M6.5 earthquake occurred in the Sumbawa region of Indonesia at 9:02 AM MST, Nov. 25, 2007 (Nov. 26 at 12:02 AM local time). The earthquake occurred off the northeast coast of Sumbawa Island (8.294°S, 118.360°E). On the map below, the epicenter is shown just south of a subduction zone. Three people were killed, hundreds were injured, and hundreds of houses were destroyed.



Map showing the location of the earthquake epicenter, nearby islands, and faulting along the Indian, Eurasian, and Pacific Plate boundaries.



Collapsed building on Sumbawa Island (photo: Teddy Boen).



Poor joint detailing on collapsed building (photo: Teddy Boen).

The earthquake had the following intensities. Felt (V) in the Bima-Dompu-Raba area. Felt (IV) at Sumbawabesar; (III) at Taliwang. Also felt (IV) at Mataram, Lombok, and (III) at Denpasar, Bali, and Labuanbajo, Flores. Felt at Kuta and Ubud, Bali.

Damage occurred almost exclusively to non-engineered buildings. It is customary in Sumbawa to use bamboo and rattan as reinforcement in buildings. Structures are weak due to concrete shrinkage and poorly detailed joints. Non-engineered buildings continue to be at high risk in much of the world. More work on affordable, easily constructed, and earthquake-resistant small buildings is needed.

Employment Opportunity

BFRL Position

The Building and Fire Research Laboratory (BFRL) of the National Institute of Standards and Technology has announced that the Associate Director position vacancy is open.

Interested applicants must apply online by January 25, 2008, via USAJOBS at www.usajobs.gov, to one of the following announcements:

- BFRL-2008-0011, Physical Scientist, ZP-1301-V (MAP/Status)
- BFRL-2008-0012, Physical Scientist, ZP-1301-V (AB/Non-status)

- BFRL-2008-0013, Economist, ZP-0110-V (MAP/Status)
- BFRL-2008-0014, Economist, ZP-0110-V (AB/Non-status)

The job is listed under several categories to appeal to a broad range of applicants. The web site has detailed information and application instructions.

Announcements

NEESR FY08 Solicitation

The George E. Brown, Jr. Network for Earthquake Engineering Simulation Research (NEESR) FY08 solicitation from the National Science Foundation has been released. This

year's solicitation invites research proposals that use the NEES infrastructure to advance knowledge discovery and innovation for (1) earthquake and tsunami loss reduction of our nation's civil infrastructure, and (2) new experimental simulation techniques and instrumentation for NEES.

Projects proposed and funded under this solicitation must use one or

more of the 15 NEES equipment sites and their related cyberinfrastructure. Proposals may be submitted in five categories: individual investigator, small group, grand challenge, simulation development, and payload. Proposals are due March 18, 2008. For more information, visit http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=6192.

Scholarships for Masters in Europe

Applications are being accepted for two English-language master's programs being conducted in Europe under the framework of the Erasmus Mundus program, both with deadlines of January 31, 2008.

MEES: The Masters in Earthquake Engineering and/or Engineering Seismology is organized by a consortium of European university and research institutions, led by the Centre for Post-Graduate Training and Research in Earthquake Engineer-

ing and Engineering Seismology (ROSE School, www.roseschool.it) and featuring the participation of the University of Patras (Greece), the University of Grenoble Joseph Fourier (France), Imperial College London (UK), the European Joint Research Centre, and the Italian National Institute of Geophysics and Vulcanology. Scholarships, ranging in value from €14,000 to €35,000, are available to applicants from all nations. For full details on the program and the online application procedure, visit www.mees.org.

SAHC: The Advanced Masters in Structural Analysis of Monuments

and Historical Construction is a Joint European Master Program on the conservation of architectural heritage structures, aiming at producing an international platform of competence. The higher education institutions involved in the consortium are the University of Minho (Guimarães, Portugal), the Czech Technical University (Prague), the Technical University of Catalonia (Barcelona), and the University of Padova (Italy). Scholarships, ranging in value from €4,000 to €14,000, are available to applicants from all nations. For full details on the program and the online application procedure, visit <http://www.msc-sahc.org/>.

Certification in Tsunami Science

Professional certification in tsunami science and preparedness will be awarded to graduates of a program to be conducted June 16-27, 2008, by the University of Washington Extension (UWE) and the U.S. National Oceanic and Atmospheric Administration (NOAA). The certification program consists of three courses providing overviews of (1) tsunami

hazard assessment, (2) tsunami warning systems, and (3) tsunami-resilient communities.

Designed for planners, policy makers, emergency managers, scientists, and engineers, the curriculum trains professionals to develop, establish, and maintain tsunami warning and preparedness systems at national, regional, and local community levels. Program graduates will receive UWE/NOAA profes-

sional certification in tsunami science and preparedness, a DVD of all instructional materials, templates for developing hazard assessments and community plans, and access to an alumni network, including archives of additional tsunami information and educational tools.

For more information, visit http://www.extension.washington.edu/ext/certificates/tsp/tsp_gen.asp or e-mail tsunami@extn.washington.edu.

Announcements

PERI Symposium on Infrastructure Policy

The Public Entity Risk Institute (PERI), a nonprofit research institute, will hold a week-long symposium on "Infrastructure Risk and Renewal: The Clash of Blue and Green," January 14-18, 2008. The program will be conducted entirely online on the PERI website at www.riskinstitute.org/PERI/SYMPOSIUM. There is no cost to participate.

During each day of the symposium, issues and ideas papers will be presented on the site, and participants will be invited to post comments and questions. Links to the papers will be e-mailed each day to individuals who register for the symposium in advance. Registration is not required.

The symposium will attempt to find practical steps to reconcile the demands of two largely independent but increasingly competitive policy movements: (1) the "sustainability" movement, aimed at environmental protection and resource efficiency and concerned with "green" designs for buildings and other infrastructure; and (2) the national security movement, responding to the threats of attack or disaster and concerned with infrastructure security.

Lewis Perelman will serve as the symposium moderator. To outline key issues to be addressed, he has written a concept paper that can be downloaded from the PERI site.

Conference on EQ Hazards in East Bay

The 3rd Conference on Earthquake Hazards in the Eastern San Francisco Bay Area will take place October 22-24, 2008, in Hayward at California State University (CSU) East Bay. The conference will highlight information on East Bay earthquake haz-

ards that has been developed since the 1982 and 1992 conferences. The activities and publications will take advantage of interest generated by the 140th anniversary of the 1868 Hayward earthquake. In addition to technical sessions, the conference will include a public forum, field trips, and tutorials for educators. For more information, visit www.consrv.ca.gov/cgs/news/eastbayconference.htm or e-mail 3rd.E.Bay.EQ.conf@conservation.ca.gov. Conference sponsors include the California Geological Survey, the U.S. Geological Survey, UC Berkeley, CSU East Bay, EERI, and the URS Corporation.

Calls for Abstracts

Masonry Seminar Commemorates Azores Quake:

The Society for the Promotion and Rehabilitation of Housing and Infrastructure and the government of the Azores are sponsoring the International Seminar on Seismic Risk and Rehabilitation of Stone Masonry Housing, in the Azores, Faial Island, July 9-13, 2008, the 10th anniversary of the 1998 Azores earthquake. Experimental in-situ testing of old masonry structures will take place during the seminar. The abstract submission deadline is December 31, 2007. For more information, visit <http://www.azores1998earthquake.org>.

Davos 2008 Conference:

Sponsored by the UN International Strategy for Disaster Reduction and the UN Educational, Scientific and Cultural Organization, the next biennial International Disaster and Risk Conference (IDRC) will be held in Davos, Switzerland, August 25-29, 2008, with the theme "Public-Private Partnership — Key for Integral Risk Management and Climate Change Adaptation." The abstract submission deadline is January 15, 2008. For more information, visit www.idrc.info.

Publications

Protect2007

Proceedings of the First International Workshop on Performance, Protection & Strengthening of Structures under Extreme Loading are now available. The CD contains over 100 state-of-the-art papers on (1) structures under impact and shock, (2) structures under blast and fire, (3) structures under seismic loads and vibrations, and (4) structural performance and strengthening. The workshop was held in Whistler, Canada, August 20-22, 2007. An order form can be downloaded from <http://www.civil.ubc.ca/protect2007/pdf/PROTECTProcForm.pdf>. The cost is \$100, including a 120-page hardcover book of abstracts.

Reforming Engineering Education

In a recently published book, *The 21st Century Engineer*, author Patricia D. Galloway paints a new global landscape where megaprojects, sustainability, infrastructure security, and multicultural work teams pose challenges for which engineers may be unprepared. She lays out non-technical areas in which engineers must become proficient: globalization, communication, ethics and professionalism, diversity, and leadership. Galloway contends that the existing system for educating engineers must change, and she proposes a new master's degree in professional engineering management. Galloway is chief executive officer of The Nielsen-Wurster Group, an international management consulting firm based in Seattle, Washington. She holds a doctorate in civil engineering as well as a master's degree in business administration. For more than 30 years, she has worked with multiple stakeholders in more than 60 countries. In 2003, she became the first woman president of the American Society of Civil Engineers. The book can be ordered for \$39 (ASCE members \$29.25) at www.pubs.asce.org.

CALENDAR

Items that have appeared previously are severely abbreviated. The issue containing the first appearance, or the most informative, is indicated at the entry's end. Items listed for the first time are shown in bold.

2008

JANUARY

3-5. Innovative and Smart Structural Systems for Sustainable Habitat (INSHAB-2008), Tamil Nadu, India. www.citinshab2008.info (8/07)

13-17. Seismic Retrofitting of Long-Span Bridges, Washington, D.C. Info: <http://www.trb.org> (9/07)

14-18. PERI Infrastructure Risk and Renewal Online Symposium. See page 10. (1/08)

FEBRUARY

6-9. EERI Annual Meeting, Astor Crowne Plaza Hotel, French Quarter, New Orleans, LA. Info: www.eeri.org. See page 1. (2/07, 3/07, 7/07, 8/07, 9/07, 10/07, 11/07, 12/07, 1/08)

15. Khan Lecture Series, Bethlehem, Pennsylvania. Info: <http://www.lehigh.edu/frkseries> (12/07)

17-20. 14th International Brick and Block Masonry Conference, Sydney, Australia. Info: <http://www.ibmac.org/> (3/07 [venue changed])

MARCH

14. Khan Lecture Series, Bethlehem, Pennsylvania. Info: <http://www.lehigh.edu/frkseries> (12/07)

APRIL

14-15. International Conference on Earthquake Engineering and Disaster Mitigation (ICEEDM08), Jakarta, Indonesia. Info: <http://www.si.itb.ac.id/iceedm08> (9/07)

16-18. Seismological Society of America 2008 Annual Meeting, Santa Fe, New Mexico. Info: <http://www.seismosoc.org/meetings/2008/index.html> (9/07)

18. Khan Lecture Series, Bethlehem, Pennsylvania. Info: <http://www.lehigh.edu/frkseries> (12/07)

22-26. 2008 National Earthquake Conference, Seattle, WA. Info: <http://www.earthquakeconference.org/> (3/07)

24-26. 1st International Conference on Transport Infrastructure, Beijing, China. Info: <http://www.jtzn.net.cn/icti/> (7/07)

MAY

18-22. Geotechnical Earthquake Engineering and Soil Dynamics Conf. IV, Sacramento, CA. Info: www.geesd.org (10/06)

26-28. XXXIII South American Structural Engineering Congress (SASEC), Santiago, Chile. Info: <http://ingenieria.ucentral.cl/ooc/jornadas2008/> (6/07)

JUNE

4-6. International Association for Bridge and Structural Engineering (IABSE) Conference, Helsinki. Info: <http://www.iabse.org/conferences/helsinki2008/index.php> (6/07)

15-18. World Conference on Disaster Management (WCDM), Toronto, Ont. Info: www.wcdm.org/ (10/07, 11/07)

18-20. Network for Earthquake Engineering Simulation (NEES) Annual Meeting, Portland, OR. Info: <http://nees.org/Education/Annual-Meeting/> (12/07)

30-July 5. Performance-Based Structural Design Optimization Minisymposium, Venice, Italy. Info: <http://www.iacm-eccomascongress2008.org/> (9/07, 11/07)

JULY

8-11. International Seismic Engineering Conference Commemorating the 1908 Messina and Reggio Calabria Earthquake (MERCEA'08), Reggio Calabria, Italy. Info: <http://www.mercea08.org> (9/07, 10/07 [date changed])

9-13. International Seminar on Seismic Risk and Rehabilitation of Stone Masonry Housing. Azores, Faial Island. See page 10. (1/08)

27-30. 6th National Seismic Conference on Bridges and Highways, Charleston, SC. Info: www.scdot.org/events/6NSC (7/07)

www.scdot.org/events/6NSC (7/07)

AUGUST

11-16. 6th International Conference on Case Histories in Geotechnical Engineering (6ICCHGE), Washington, D.C. Info: <http://www.6icchge2008.org> (4/06, 9/06, 2/07, 6/07, 10/07)

25-29. International Disaster and Risk Conference (IDRC). Davos, Switzerland. See page 10. (1/08)

SEPTEMBER

16-17. 5th European Workshop on the Seismic Behavior of Irregular and Complex Structures (5EWICS), Catania, Italy. Info: <http://www.5ewics.dica.unict.it/> (12/07)

17-19. International Association for Bridge and Structural Engineering (IABSE) Conference, Chicago. Info: <http://www.wcdm.org/> (10/07)

22-24. 9th Workshop on Three-Dimensional Modeling of Seismic Waves Generation, Propagation, and their Inversion, Trieste, Italy. Info: <http://agenda.ictp.it/smr.php?1965> (12/07)

OCTOBER

12-17. 14th World Conference on Earthquake Engineering, Beijing, China. Info: www.14wcee.org (12/05, 6/07, 7/07, 9/07)

22-24. 3rd Conference on Earthquake Hazards in the Eastern SF Bay. Hayward, California State University East Bay. See page 10. (1/08)

15-17. Deep Foundation Institute Annual Conference, New York City. Info: <http://www.dfi.org/update/CF-PNY2008FINAL.pdf> (12/07)



NEES News

Tsunami-Resistant Buildings

NEES@Oregon State hosts the world's most comprehensive facility for studying the effects of tsunami and other large waves. The tsunami wave basin and the large wave flume allow researchers to study

wave impact, inundation, debris flow, beach scour, and other effects of waves on shorelines and structures. Thanks to a \$1.3 million grant from the National Science Foundation, a new piston-style wave-maker will further enhance the facility's capacity and enable researchers to create 1/6-scale tsunami waves.

Current research at NEES@Oregon State includes two projects on how

to build structures that can survive tsunami. In the first study, a team led by the University of Hawaii is seeking to develop a methodology and tools for implementing site-specific performance-based tsunami engineering. In over 1,000 trials, researchers have studied sediment transport and scour, bore formation and energy dissipation, and fluid-structure interaction. Preliminary results indicate there is good agreement with simulation models for sediment transport and bore formation. Impulsive loads, due to bore impact on certain structural elements, appear to be significantly larger than previously considered. Next, the team will apply these results to the structural analysis of typical coastal facilities.

In a second study, researchers led by Colorado State are testing a 1/6-scale, two-story wood-frame house to determine what forces are experienced when such a building is hit by a tsunami wave. This research seeks to relate wave height to impact force and to document force transfer from the bore to the structure.

For more information, visit <http://nees.oregonstate.edu>.



Waves impacting a 1/6-scale residential wood house at the NEES Tsunami Research Facility.



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